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M&A #01-024-17

Mr. Wayne Rosenbaum
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402 West Broadway, Ste. 2300
San Diego, CA 92101

RE: Qualitative Evaluation of Escondido Creek and an Unnamed Tributary for Sediment Discharge Impacts Associated with Escondido Research and Technology Center

Dear Wayne,

Background

This letter has been prepared in response to your request for Merkel & Associates to conduct a survey of the receiving waters from the Escondido Research and Technology Center project site to determine the impacts to waters associated with site discharges during the 2004-2005 storm season (Figure 1). In conducting this work, we focused on discharges of sediment, as we understand that this is the pollutant that has been identified as of greatest concern to the Regional Board staff and the only pollutant identified in Complaint for Administrative Civil Liability R9-2005-0059 issued to JRMC Real Estate on March 10, 2005 as having been allegedly discharged from the site. While we omit discussion of other pollutants, we did not note evidence of ERTC traceable discharges of other pollutants to the downstream watercourse.

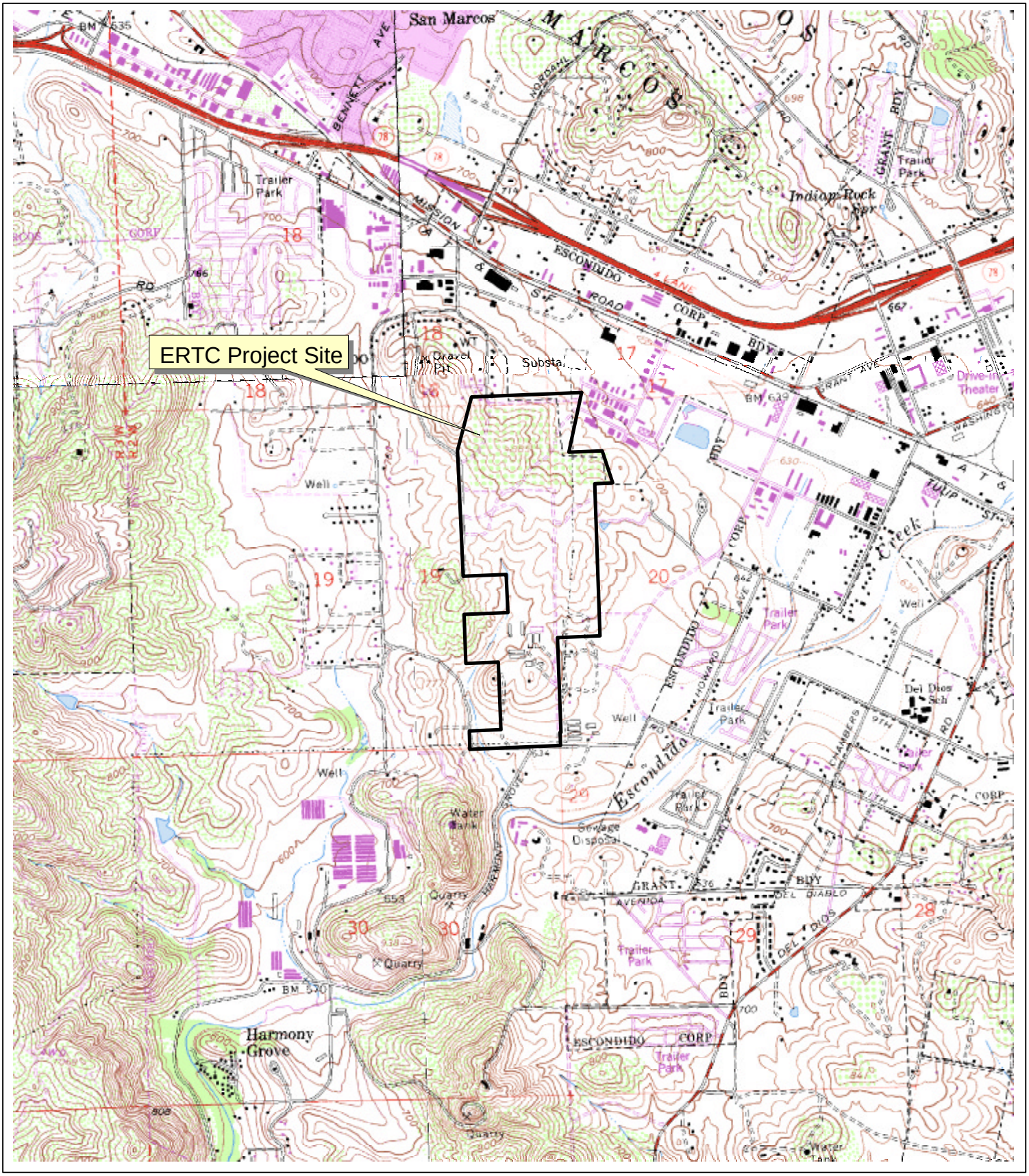
Scope of Services Performed

Merkel & Associates (M&A) was requested to; 1) evaluate the waterway that conveys discharges from the Escondido Research and Technology Center project site (ERTC), 2) photo document current conditions; and 3) summarize findings in a letter report.

To address these tasks Edward Ervin, associate biologist with M&A, conducted a field investigation on June 16, 2005. Fieldwork consisted of walking the drainage that directly receives discharge from the Kauana Loa Basin adjacent to the Escondido Research and Technology Center project site (ERTC) as well as evaluating the Escondido Creek reach affected by site discharge to document current creek conditions and look for indications of sedimentation that could potentially have occurred during previous storm waterborne sediment discharges from the ERTC site (Figure 2). In addition, where sedimentation was detected, an effort was made to characterize the type and extent of adverse effect on existing beneficial uses expected to normally be present absent the sedimentation that occurred.

The reaches surveyed included the Harmony Grove Bridge over Escondido Creek, the Kauana Loa sediment catchment basin, the unnamed tributary of Escondido Creek that receives discharge from

the Kauana Loa catchment basin, Escondido Creek above the confluence with the unnamed tributary, Escondido Creek below the confluence with the unnamed tributary, and Escondido Creek at the Country Club Road crossing. Data collection entailed photo-documenting current conditions and making notes of recent sediment deposits within the dry unnamed drainage or along Escondido Creek on an aerial photograph map of the area.



N
W E
S

1" = 2000'

Project Vicinity Map

ERTC Stormwater Receiving Waters

Source: USGS 7.5' USGS Escondido, CA Quadrangle

Figure 1

N
W E
S

ERTC Stormwater Receiving Points

Figure 2

By evaluating the conditions of the on-site discharge points as well as upstream portions of Escondido Creek, it is possible to establish the likely sediment type discharged from the site as well as the baseline conditions of the water body into which the discharges occurred. Survey areas were limited to the reaches discussed because of the expected inability to distinguish ERTC discharge influences further removed from the site.

Results of Investigations

Harmony Grove Bridge (Photo Points 1, 2)
The Harmony Grove Bridge occurs upstream of the ERTC site and thus serves to provide a baseline condition of Escondido Creek. At the Harmony Grove Bridge, Escondido Creek transitions from a channelized drainage to a natural bed. The examination of this area was limited to observation made from the bridge due to the presence of chain-link fences that prevented closer inspections of the creek channel and the sediments present. Observations made included sediment accretion on channel bottom that appeared to contain a mix of clay, silt, and sand, with some organics, with the fine dark sediments being more abundant than sand.

Given the deposition of well graded sediment materials within the concrete channel, it is clear that significant sediment transport from upstream areas occurred during the past rainy season and that substantial deposition occurred during waning flows.

Sediment Catchment Basin (Photo Points 3-5)
The Kauana Loa sediment catchment basin is located adjacent to the southwest corner of the ERTC project site and north of Kauana Loa Drive. The basin was nearly dry, consequently no discharges were occurring during survey. The majority of the basin substrate was showing the typical cracking pattern as the sediments dried. Very fine silts were observed on the dry plastic liner used to direct basin flows into an off-site culvert located under Kauana Loa Drive.

The most important observations from the basin are the presence of fine sediments up to the basin discharge point. This observation suggests that discharges of sediments did occur from this basin to the downsteam unnamed tributary. However, the observations also suggest that the discharges to downstream areas were fine fraction sediments rather than sandy sediments. As such, downstream areas of sediment accretion that could be associated with the ERTC project should contain fine sediments rather than sandy sediments. Sandy sediment accretions would likely be derived from other sources.

Unnamed Tributary of Escondido Creek (Photo Points 6-17)
This highly seasonal south flowing drainage collects and carries storm water from upland areas directly into Escondido Creek. The drainage reach begins immediately south of Kauana Loa Drive (Photos 6-7) and continues to below Harmony Grove Road on into Escondido Creek (Photos 8-17). Below the discharge point of the Kauana Loa Drive culvert, no fine sediment was observed in the drainage channel. Within the reach from Harmony Grove Road south to the confluence of the Escondido Creek the substrate of the tributary channel largely consisted of older firmly-cemented clay deposits that are resistant to erosion and which prevent this channel from becoming deeply incised. The channel bed consists of a series of mini scour pits where high velocity flows have cut through the clay layers.

In one location a larger scour pool was detected and very fine silt/clay particle were observed and photo documented (Photo Point 14). No standing water occurred at the time of the survey and the

sediments were in the process of drying and forming the typical cracking pattern. The sediment appeared to be a different color and texture than the sediments found along the rest of this tributary channel. Given the nature of channel hard panne, it is possible that these fine grain deposits represent sediments from the ERTC project site. This location is the only point along the surveyed reach where sediments possibly derived from the ERTC project site were found.

The deposits occur within an approximately 10-foot by 30-foot reach of the ephemeral drainage and thus are not anticipated to support a diverse or persistent aquatic community. Absent sediment accumulation within this area, the underlying channel bed is expected to resemble the hard panne found upstream and downstream of this point. As such, no well-developed benthic community would normally be expected at this location. The accumulation of silt within this pool has shallowed the depth of the pool itself and thus would be expected to limit the duration over which water would normally stand following a rainfall event. While such areas are often sources of mosquitoes during the spring, they also provide important breeding habitat for native amphibians. With a shallowing of this pool, there would be an expectation of a reduced period of pool presence and thus reduced suitability to support seasonal use by such species as Pacific chorus frogs, western toads, and the sensitive spadefoot toad. However, there is no certainty that the pool would be used by these species absent the sediment load, or that it wasn't used by these species even with the sediment loading. Further as a result of the very wet winter, breeding habitat was more abundant and far less limiting than it has been in the past drought conditions as such, it is not likely that reduced persistence of this pool resulted in significant adverse impacts to availability of breeding habitat resources. No terrestrial resources would be expected to be adversely effected by the deposition of sediments at this location.

Photos 16 and 17 depict trash deposits along the channel at its confluence with Escondido Creek. This is an area that has been subject to some degree of exotic species control as evidenced by the cut Arundo in these photographs. The trash present at these locations is not consistent with that of active construction sites. An abundance of plastic quart containers for motor oil, soft drink bottles, paper plates and styrofoam cups, Rustoleum spray paint cans, tires, beer bottles, and tennis balls are generally associated with rural and suburban neglect rather than construction sites.

Escondido Creek above the confluence with the unnamed tributary (Photo Points 18-27)
The surface flow of Escondido Creek at the time of the survey was contained within the normal low flow channel and was relatively free of suspended soil particulates. Water had a predominantly greenish color due to phytoplankton. Banks were not in the process of active erosion. However, in one location, a significant amount of undercutting and bank failure was noted (Photo Point 18). The soils layers at this eight-foot high erosion scarp consisted of stratified layers of hard clays and friable loosely cemented sands. Elsewhere much of the channel appeared stable and well vegetated with little evidence of erosion (Photos 19-21).

Elsewhere within the channel, significant flows breached over lower riparian benches and cut new secondary channels through the established vegetation. The secondary channels were dry at the time of the surveys and the substrate was characterized as either recent alluvial sand deposits (Photo Point 22) or scoured older hard clays (Photo Points 24, 25). This area was evaluated to serve as a baseline for comparison to the reach immediately below the point ERTC flow enters the creek.

Escondido Creek below the confluence with the unnamed tributary (Photo Points 28-30)
Like the reach above the confluence, the surface flow of Escondido Creek at the time of the survey was contained within the low flow thalweg. The waters were relatively free of sediment and had a

predominantly greenish color. The fluvial deposits on the banks were examined to determine the composition. Qualitative assessment were made, no soil or water samples were collected or analyzed. The substrate within the channel areas consisted of an approximate 50/50 ratio of older compacted clays and recent sand deposits (fine/medium/course). Further up the creek bank the soil was loose (lacking natural mineralization) friable sand. Within faster moving sections of the channel, the channel bed supports a clean sand bottom. The substrate within the slower moving channel sections was largely characterized as a thin silt/organic layer over firm deposits of sand. It is possible that some of the silt deposits in these areas were derived from the ERTC site; however, it is not possible to determine the origin of these materials given the considerable upstream sources. The extent of fine sediment deposits within the deeper slower moving pool areas of the creek are not atypical of natural drainage conditions in low gradient streams. As such, the accumulation of silts in these areas is not considered to be adverse to the beneficial uses developed in this reach.

Country Club Road crossing (Photo Points 31-35)

Like the two previously described reaches of Escondido Creek, the surface flow at the time of the survey was contained within the normal low flow channel, did not appear to contain suspended soil particulates, and had a predominantly greenish color. There was no discernable qualitative difference between this reach and the Escondido Creek below confluence reach described in the preceding paragraph.

Other Locations in the Watershed

The discharge of fine sediments from the ERTC site likely occurred during extremely punctuated rainfall events during which surface run-off carried suspended sediment loads to Escondido Creek. Very shortly after the initial passage of a storm event, the discharge from the site would be expected to drop off. However, because of the predominantly east-west orientation of the watershed the discharge of Escondido Creek would continue for an extended period as storms traveling eastward continued to feed the upper watershed. Because of the watershed geometry and the highly suspendable nature of the sediments discharged from the site, it is likely that the majority of fine sediment derived from the ERTC site was conveyed downstream as a small fraction of the overall sediment load. The majority of the material was likely discharged to the ocean. For clarity purposes, it is important to note that the fine sediment fraction that may have discharged down the creek would not be dissimilar from other watershed run-off sources. Because coarse sediments are trapped in basins or would naturally settle out in the reaches nearest the site before reaching the lagoon, the discharges of suspendable solids would include those of soil erosion origin as well as atmospheric dust occurring throughout the watershed. During the storm events of the 2004-2005 rain year (July 1st – June 30th), waters discharging down Escondido Creek were a chocolate brown color both upstream and downstream of the confluence of the unnamed tributary into which the Kuauna Loa Basin discharges. This suggests little difference in the quality of water derived from the site and that derived from elsewhere in the watershed.

I trust this letter accurately characterizes the definable impacts of discharge of sediments from the ERTC site during the 2004-2005 rainy season. Please contact me if you have any questions regarding the findings of this letter or if you would like additional clarification on any points made.

Sincerely,

Keith W. Merkel
Principal Ecologist

Photo Point 1. Channelized portion of Escondido Creek north from the Harmony Grove Drive Bridge (16 June 2005).

Photo Point 2. Escondido Creek south from the Harmony Grove Drive Bridge (16 June 2005).

Photo Point 3. Nearly dry sediment catchment basin located in the southwest corner of the ERTC project site (16 June 2005).

Photo Point 4. Area of the sediment catchment basin including the 36" outflow riser (16 June 2005).

Photo Point 5. Plastic lined area that receives the discharge from the sediment containment pond and funnels it to the culvert under Kauana Loa Drive. (16 June 2005).

Photo Point 6. Portion of the unnamed tributary of Escondido Creek and culvert south of Kauana Loa Drive (16 June 2005).